## Claims

1-29 (Cancelled)

30. A prosthesis formed according to a process including:

braiding a plurality of elongate filaments composed of a bioabsorbable material on a first mandrel to form a tubular, radially compressible prosthesis structure having a first diameter;

disposing the prosthesis structure on a second mandrel having a second diameter less than the first diameter; and

while the prosthesis structure is so disposed, annealing the prosthesis structure at a temperature between a glass transition temperature of the bioabsorbable material and a melting temperature of the bioabsorbable material, to form an annealed prosthesis structure having an annealed diameter D when in a free state less than the first diameter of the prosthesis structure before said annealing, the annealed prosthesis structure further being radially compressible to reduced diameters less than the annealed diameter D and radially self-expandable from the reduced diameters;

wherein the annealed prosthesis structure consists essentially of the elongate filaments.

31. The prosthesis of claim 30 wherein:

the elongate bioabsorbable filaments comprise a material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof.

32. The prosthesis of claim 31 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

33. The prosthesis of claim 31 wherein:

the filaments consist of polyglycolide.

34. The prosthesis of claim 31 wherein:

the filaments include at least one of the bioabsorbable materials selected from the group consisting of polygluconate and polydioxanone.

35. The prosthesis of claim 30 wherein:

the first diameter is in the range of 3-30 mm, and the annealed diameter D is in the range of 0.2-10 mm.

36. The prosthesis of claim 30 wherein:

the filaments are substantially uniform in cross-section and length.

37. The prosthesis of claim 30 wherein:

the filaments include first and second sets of filaments wound helically in respective and opposite first and second common directions.

38. The prosthesis of claim 37 wherein:

said sets of filaments cross one another at an axially directed angle between about 120 degrees and about 150 degrees.

39. A bioabsorbable implantable annealed prosthesis structure, including:

a first set of flexible bioabsorbable filaments wound helically in a first common direction, and a second set of flexible bioabsorbable filaments wound helically in a second common direction different from the first common direction, crossing the filaments of the first set and cooperating with the first set of filaments to form a prosthesis structure having an initial diameter;

wherein the prosthesis structure selectively treated according to a process including selecting a diameter D less than the initial diameter and corresponding to a target radial force value according to a relationship, predetermined with respect to an annealed prosthesis structure, between annealed diameter and radial force exerted by the annealed prosthesis structure when radially constrained to a predetermined fraction of the annealed diameter, followed by annealing the prosthesis structure to form an annealed prosthesis structure having the selected diameter D when in a relaxed state;

wherein the annealed prosthesis structure exerts an outwardly directed radial force when radially constrained to diameters less than the selected diameter D, and exerts a radial force

substantially equal to said target radial force value when constrained to said predetermined fraction of the selected diameter.

40. The prosthesis of claim 39 wherein:

the elongate bioabsorbable filaments comprise a material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof.

41. The prosthesis of claim 40 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

42. The prosthesis of claim 39 wherein:

the filaments consist of polyglycolide.

43. The prosthesis of claim 39 wherein:

the filaments include at least one of the bioabsorbable materials selected from the group consisting of polygluconate and polydioxanone.

44. The prosthesis of claim 39 wherein:

the first diameter is in the range of 3-30 mm, and the second diameter is in the range of 0.2-10 mm.

45. The prosthesis of claim 39 wherein:

the filaments are substantially uniform in cross-section and length.

46. The prosthesis of claim 39 wherein:

the first and second common directions of winding are opposite one another.

47. The prosthesis of claim 46 wherein:

said sets of filaments cross one another at an axially directed angle between about 120 degrees and about 150 degrees.

48. The prosthesis of claim 39 wherein:

the flexible bioabsorbable filaments of the first and second sets are interbraided.

49. A radially self-expanding bioabsorbable prosthesis configured with predetermined radial force characteristics according to a process including:

providing a tubular, radially compressible prosthesis structure composed of a plurality of elongate bioabsorbable filaments and having a first diameter;

selecting a target radial force;

determining an annealed diameter D less than the first diameter and corresponding to the selected target radial force according to a relationship, predetermined with respect to an annealed prosthesis structure, between annealed diameter and radial force exerted by the annealed prosthesis structure when radially compressed to a predetermined fraction of the annealed diameter;

while maintaining the prosthesis structure at the annealed diameter D, annealing the prosthesis structure at a temperature between a glass-transition temperature of the bioabsorbable filaments and a melting temperature of the bioabsorbable filaments, to form an annealed prosthesis structure having the annealed diameter D when in a relaxed state;

wherein the annealed prosthesis structure exerts a radial force when radially compressed to diameters less than the annealed diameter D, and exerts a radial force substantially equal to the selected radial target force when compressed to said predetermined fraction of the annealed diameter D.

50. The prosthesis of claim 49 wherein:

providing the radially compressible stent structure includes winding the plurality of elongate bioabsorbable filaments on a first mandrel; and

maintaining the prosthesis structure at the annealed diameter includes disposing the prosthesis structure on a second mandrel having a diameter less than that of the first mandrel.

51. The prosthesis of claim 49 wherein:

the elongate bioabsorbable filaments comprise a material selected from the group consisting of: polydioxanone, polycaprolactone, polygluconate, polylactic acid-polyethylene

oxide copolymers, modified cellulose, collagen, poly(hydroxybutyrate), polyanhydride, polyphosphoester, poly(amino acids), poly-L-lactide, poly-D-lactide, polyglycolide, poly(alpha-hydroxy acid) and combinations thereof.

52. The prosthesis of claim 51 wherein:

the bioabsorbable material is selected from the group consisting of poly-L-lactide, poly-D-lactide, polyglycolide, and their combinations.

53. The prosthesis of claim 49 wherein:

the filaments consist of polyglycolide.

54. The prosthesis of claim 49 wherein:

the filaments include at least one of the bioabsorbable materials selected from the group consisting of polygluconate and polydioxanone.

55. The prosthesis of claim 49 wherein:

the first diameter is in the range of 3-30 mm, and the second diameter is in the range of 0.2-10 mm.

56. The prosthesis of claim 49 wherein:

the filaments are substantially uniform in cross-section and length.

57. The prosthesis of claim 50 wherein:

the filaments are wound in first and second common directions of winding, opposite one another.

58. The prosthesis of claim 46 wherein:

said filaments cross one another at an axially directed angle between about 120 degrees and about 150 degrees.

59. The prosthesis of claim 49 wherein:

the flexible bioabsorbable filaments are interbraided.